

What is claimed is:

1. A reaction chamber for depositing a thin film, the reaction chamber comprising: a reactor block; a wafer block located inside the reactor block; a top plate which covers the reactor block to maintain a predetermined pressure; a feeding
5 unit which supplies a first reactive gas and a second reactive gas; a shower head, which is installed in the top plate and includes a plurality of first spray holes for spraying the first reactive gas supplied from the feeding unit on a wafer and a plurality of second spray holes for spraying the second reactive gas supplied from the feeding unit; and an exhaust unit which expels gases from the reactor block,
10 the feeding unit comprising:
a feeding block that is connected to the shower head;
a distributing block which is connected to a first gas supply line to uniformly distribute the first reactive gas;
two or more first gas transfer pipes which connect the feeding block to the
15 distributing block; and
a second gas transfer pipe which is formed in the center of the feeding block and connected to the second gas supply line,
the shower head comprising an upper diffusion block connected to the bottom of the feeding unit, an intermediate diffusion block adhered to the bottom of the
20 upper diffusion block, and a lower diffusion block adhered to the bottom of the intermediate diffusion block,
the upper diffusion block comprising:
a connecting unit which is connected to the feeding block and includes first feeding holes which are respectively connected to the first gas transfer pipes and a
25 second feeding hole which is connected to the second gas transfer pipe;
a plurality of first main flow paths which are formed on the bottom of the connecting unit, which are connected to the first feeding holes, respectively, and are radially and symmetrically formed around the center of the connecting unit; and
a plurality of first sub-flow paths, which are formed in the bottom of the
30 connecting unit and extend perpendicularly from each of the first main flow paths,
the intermediate diffusion block comprising:
a plurality of second main flow paths, which are formed on the intermediate diffusion block and respectively correspond to the first main flow paths;

a plurality of second sub-flow paths which are formed on the intermediate diffusion block and respectively correspond to the first sub-flow paths;

a plurality of first distributing holes which are formed at regular intervals in the second sub-flow paths and second main flow paths; and

5 a second distributing hole connected to the second feeding hole,
the lower diffusion block comprising:

a plurality of first spray holes connected to the first distributing holes,
respectively, for spraying the first reactive gas on the wafer; and

10 a plurality of second spray holes formed between the first spray holes for
spraying the second reactive gas on the wafer.

2. The reaction chamber of claim 1, wherein the first gas transfer pipes are symmetrically disposed between the feeding block and the distributing block.

15 3. The reaction chamber of claim 1, wherein a diffusion region having a plurality of convex portions and a plurality of concave portions is formed on the top surface of the lower diffusion block, and the first spray holes are formed in the convex portions and the second spray holes are formed in the concave portions.

20 4. The reaction chamber of claim 1, wherein a temperature sensor and a heater are mounted on the feeding block to control the temperature of the reactive gases.

25 5. The reaction chamber of claim 1, wherein each of the first sub-flow paths of the upper diffusion block has the same shape as each of the second sub-flow paths of the intermediate diffusion block, and each of the first main flow paths of the upper diffusion block has the same shape as each of the second main flow paths of the intermediate diffusion block.

30 6. The reaction chamber of claim 1, wherein the number of the first feeding holes is proportional to each of the number of the first main flow paths and the number of the second main flow paths.

7. The reaction chamber of claim 1, wherein the upper diffusion block, the intermediate diffusion block, and the lower diffusion block are integrally formed.